

Patent Claims

1. A method for the production of a thin-walled part (33), especially a pipe section,

characterized in that

the wall (11) of the part (33) is drawn out from a strip (1) of material, an inner contour (17) is cut out, the wall (11) is ironed, and an outer contour is cut from the strip (1) of material.

2. The method as claimed in claim 1, characterized in that the strip (1) of material is clamped between a clamping plate with a cavity (4) and a guide plate (3) to guide a drawing die (6), and a contour for the part is drawn by the drawing die (6) in the cavity (4) in the clamping plate (2), after which cutting of an inner contour (17) followed by ironing of a wall area (11) of the part (13) between the inner contour (17) and the rest of the strip (1) of material takes place, and then an outer contour of the part is cut from the strip (1) of material and the part is ejected.

3. The method as claimed in claim 2, characterized in that the wall (11) of the part (33) is bent at an angle from the strip (1) of material by the drawing die (6).

4. The method as claimed in claim 2 or 3, characterized in that the thickness (s) of the wall (11) of the part (33) in relation to the thickness of the strip (1) of material is reduced by the drawing die (6).

5. The method as claimed in at least one of claims 1 to 4, characterized in that, in conjunction with ironing of the part, its wall (11) is formed by about 90° in relation to the strip (1) of material.

6. The method as claimed in at least one of claims 1 to 5, characterized in that, in conjunction with ironing of the part (33), its wall thickness (s) is reduced in relation to the thickness of the strip (1) of material.

7. The method as claimed in at least one of claims 1 to 6, characterized in that the part (33) is calibrated after parting from the strip (1) of material.

8. The method as claimed in at least one of claims 1 to 7, characterized in that, between cutting of the inner contour (17) and ironing, at least one further bending of the wall (11) of the part takes place.

9. A device for performing the method as claimed in at least one of claims 1 to 8, characterized in that, for the purpose of cutting the inner contour (17), a cutting die (16) is guided in a further guide plate (10), which with an inclined pressure wall (13) makes contact with the wall area (11) of the part, so that the latter is held between the pressure wall (13) and a supporting surface (12) of a clamping plate (9), in conjunction with which the supporting surface (12) at least partially envelops an opening (18) into which the cutting punch is introduced.

10. The device for performing a method as claimed in at least one of claims 1 to 9, characterized in that, for the purpose of ironing the wall area (11) of the part, a drawing die (23) is guided in a guide plate (19) and a clamping plate (24) exhibits a corner bead (25) to receive the wall area (11).

11. The device for performing the method as claimed in at least one of claims 1 to 10, characterized in that, for the purpose of cutting the outer contour, a cutting die (26) with a cutting edge (27) is guided relative to a guide plate (29), in conjunction with which the cutting die (26) exhibits an indentation (28) on its cutting edge (27), between which or an opening wall of the clamping plate (30) the wall (11) of the part is present.

12. The device for performing the method as claimed in at least one of claims 9 to 11, characterized in that the guide plate (10, 19, 29) is provided with a knife-edged ring (14).

13. A camshaft having a shaft and cams arranged thereon, characterized in that pipe sections (33) produced according to a method in accordance with one of claims 1 to 8 and/or with a device in accordance with at least one of claims 9 to 12 are placed on a bar-shaped or pipe-shaped shaft and are secured thereto.

14. The camshaft as claimed in claim 13, characterized in that the pipe sections (33) exhibit an egg-shaped cross-

section.

15. The camshaft as claimed in claim 13 or 14, characterized in that the pipe sections (33) are secured to the shaft by welding.